

ORIGINAL ARTICLE

THE RELATIONSHIP OF DIURETIC THERAPY AND CLINICAL OUTCOME ON QUALITY OF LIFE OF PATIENTS WITH CONGESTIVE HEART FAILURE

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ABSTRACT

Congestive Heart Failure (CHF) has an impact on decreased quality of life and is the main cause of mortality and morbidity. To measure therapeutic goals and clinical outcomes, it is necessary to carry out a Health Associated Quality of Life (HRQoL) assessment. The study aimed to examine the relationship between diuretic therapy and clinical outcomes on the quality of life of patients with CHF. This descriptive-analytical study with a cross-sectional approach out was carried out at the Cardiology Polyclinic, Dr. M. Djamil Hospital in Padang. The Indonesian version of the Minnesota Living with Heart Failure Questionnaire (MLHFQ) was used and validated previously. The main clinical outcome was peripheral edema. A total of 98 CHF patients participated in the study. Data on diuretic therapy, clinical outcomes, quality of life, and patients' sociodemographics were obtained from questionnaires and medical records. The Kruskal-Wallis and Mann-Whitney tests were used to analyze the relationship between diuretic therapy and clinical outcomes on patients' quality of life. Based on sociodemographics, most patients with congestive heart failure were male (66.3%), aged ≥ 60 years (51%), high school education level (38.8%), and retired (26.5%). The quality of life of patients with predominant CHF is of good quality (65.3%). The most common features of diuretic therapy were the combination of furosemide and spironolactone (54.1%) and the main clinical outcome was the presence of peripheral edema (53.1%). In conclusion, there is a substantial connection between diuretic therapy and the clinical effect (peripheral edema) on the patient's quality of life ($p < 0.05$).

Keywords: Congestive Heart Failure, Diuretic Therapy, Clinical Outcome, Quality of Life

INTRODUCTION

Congestive Heart Failure (CHF) which is also known as congestive heart failure is a condition in which the heart is unable to pump blood in normal amounts with following the needs of tissue metabolism ¹. Heart failure is characterized by the typical symptoms of shortness of breath, swelling of the ankles, and fatigue which may be accompanied by edema ². These symptoms will inhibit daily physical and social activities and result in poor quality of life ³.

One of the main therapies for congestive heart failure is diuretics, it recommended if there are clinical signs such as fluid retention or edema. Diuretics directly effect cardiac contractility but rather reduce venous pressure and ventricular preload. Spironolactone and eplerenone, aldosterone antagonist diuretics (mineralocorticoids), have benefits in reducing morbidity and mortality in patients with severe heart failure who are also receiving ACE inhibitors and other standard therapies ⁴. The goal of diuretic therapy in heart failure is to reduce peripheral oedema, pulmonary congestion, signs, and other symptoms of systemic fluid retention ⁵. To measure the final outcome of therapeutic goals and clinical outcomes results, it is necessary to assess

patients with the concept of Health Related Quality of Life (HRQoL) ⁶.

HRQoL is a unit consisting of assessing the physical symptoms associated with the disease, the individual's ability to cope with the illness, and an understanding of how the individual assesses his condition ⁷. One of the goals of measuring quality of life is to objectively evaluate how and how much the disease affects the patient's life and how the patient copes ⁸. This study was conducted to determine the relationship between quality of life and clinical outcomes on the quality of life of patients with congestive heart failure at DR. M. Djamil Padang Hospital.

METHODS

This research is a descriptive analytic study with a cross sectional from December 2021 to May 2022. at the Cardiology Polyclinic, Dr. M. Djamil Padang Hospital. Sample selection was done by purposive sampling method with inclusion criteria 1) all CHF patients who came to the Cardiology Polyclinic, DR. M. Djamil Padang Hospital, 2) willing to fill out the questionnaire by filling in informed consent, 3) patients who have undergone congestive heart failure therapy for at least 4-four weeks, 4) patients who receive diuretic therapy. Sociodemographic data (gender, age, education level, and occupation),

diuretic therapy, clinical outcome, and quality of life of CHF patients were obtained from questionnaire answers and patient medical records. The Indonesian version of the Minnesota Living with Heart Failure Questionnaire (MLHFQ) instrument was used and validated previously for the quality of life instrument. The Indonesian version of MLHFQ has good validity and reliability in assessing the quality of life of patients with chronic heart failure in Indonesia with the Cronbach α of the Indonesian version of MLHFQ being 0.887; while the Intraclass Correlation Coefficients (ICCs) was 0.918 ⁹.

The health research ethics which committee approved the study by Dr. M. Djamil Padang Hospital with the ethical number LB.02.02/5.7/60/2022. The research fulfills the (7) seven WHO 2011 standards.

Statistical Analysis

The MLHFQ consists of 21 questions with a 6-point Likert scale (not = 0 / very little = 1 / a little = 2 / quite = 3 / a lot = 4 / very much = 5). MLHFQ items include physical heart failure symptoms (dyspnea, fatigue, peripheral edema, and difficulty sleeping); Psychological symptoms (anxiety and depression) and social/functional disorders due to heart failure (walking, climbing stairs, working, housekeeping or labor, needing rest, going away from home, doing things with family and friends, eating, concentration, memory, loss of self-control, becoming a burden on others and sexual activity). Scores range from 0 to 105 and higher scores indicate worse quality of life. a score < 24 on the MLHFQ would represent a good quality of life,

between 24-45 would represent a moderate quality of life, and a score of > 45 would indicate a poor quality of life ¹⁶. The MLHFQ total score was conceptually designed to summarize all issues related to the HRQL of heart failure patients.

Descriptive status describes demographic characteristics such as age, gender, education, and employment. Percentages and frequencies were used for categorical variables (age, sex, education level, occupation, type of diuretic used, clinical outcomes, and quality of life scores) ¹⁰.

Data on diuretic therapy were obtained from patient medical records, while data on patient clinical outcomes (peripheral edema) were obtained from patient questionnaire answers based on the patient's perspective.

The relationship of diuretic therapy to quality of life was analyzed using the Kruskal-Wallis correlation test. The relationship between clinical outcomes (peripheral edema) and quality of life was analyzed using the Mann-Whitney test ¹¹. The relationship analysis was concluded with a confidence level of 95%.

RESULTS

Among the 104 patients diagnosed with Congestive Heart Failure at Dr. M. Djamil Padang Hospital's Heart Polyclinic, 98 met the specified inclusion criteria. Table 1 presents the sociodemographic traits of patients diagnosed with CHF.

Table 1: Data on sociodemographic characteristics of patients with congestive heart failure.

Category	Amount (n)	Percentage (%)
Sex		
- Male	65	66.3
- Female	33	33.7
Age		
- Adult	48	49
- Elderly (\geq 60 years)	50	51
Education		
- Not completed Elementary school	3	3.1
- Elementary school	8	8.2
- Junior high school	17	17.3
- high school	38	38.8
- University/Academy	32	32.7
Occupation		
- Household householder	25	25.5
- Retired	26	26.5
- Entrepreneur	23	23.5
- civil servant	7	7.1
- Private	7	7.1
- Others	10	10.2

Table 2: Data on the relationship between diuretic therapy and quality of life in heart failure patients.

Diuretic therapy	Total (n)	Percentage (%)	p-value
- Furosemide	26	26.5	0.003
- Spironolactone	19	19.4	
- Furosemide and Spironolactone	53	54.1	

Based on the data presented in Table 2 regarding the distribution of diuretic therapy among congestive heart failure patients, it's evident that a greater number of patients opted for the

combination of Furosemide and Spironolactone. Additionally, an observed relationship between diuretic therapy and the quality of life among these patients was noted ($p < 0.05$).

Table 3: Data on the relationship of clinical outcome (peripheral edema) to the quality of life of patients with heart failure.

Clinical Outcome	Total (n)	Percentage (%)	p-value
Peripheral edema			0.000
- None	46	46.9	
- Yes	52	53.1	

From the information provided in Table 3, it's clear that a greater proportion of Congestive Heart Failure patients experience peripheral edema. Additionally, there's a discernible

correlation between these clinical outcomes, particularly peripheral edema, and the quality of life among individuals dealing with CHF ($p < 0.05$).

Table 4: Data on quality of life for patients with congestive heart failure.

Category Quality of Life	Total (n)	Percentage (%)
- Good	64	65.3
- Moderate	22	22.4
- Poor	12	12.2

The data in Table 4 describes that at Dr. M. Djamil Padang Hospital, most Congestive Heart Failure patients exhibit good quality of life (65.3%). These findings align with the clinical outcomes of patients, predominantly falling within the normal range.

Based on the data in Table 5, it is evident that 65.6% of patients using a combination of furosemide and spironolactone exhibited a good quality of life, whereas only 17.2% experienced good quality of life with single therapy using either furosemide or spironolactone.

Table 5: Data on the relationship between diuretic therapy and the quality of life of CHF patients based on the MLHFQ.

Diuretic Therapy	MLHFQ category			p-value*
	Good (%)	Moderate (%)	Poor (%)	
- Furosemide	17.2	40.9	50	0,003
- Spironolactone	17.2	22.7	25	
- Furosemide and Spironolactone	65.6	36.4	25	

*Kruskal-Wallis

DISCUSSION

Of the total 104 Congestive Heart Failure (CHF) patients at the Heart Polyclinic of Dr. M. Djamil Padang Hospital (Table 1), the patient with CHF mostly was male (66.3%), aged 60 years (51%), high school education level (38.8%), and retired status (26.5%).

Table 2 illustrates that if a single-loop diuretic alone proves insufficient, augmenting its effect with a potassium-sparing diuretic may be beneficial¹². The choice of loop diuretics depends on the severity of the patient's symptoms and the required level of diuresis. As edema progresses, especially with the worsening

of the underlying disease, combining diuretic therapies might be considered¹³. Combining furosemide with spironolactone offers the advantage of reducing volume overload by enhancing diuresis and counteracting the effects of increased aldosterone in heart failure¹⁴.

Based on data on the distribution of patient clinical outcomes congestive heart failure (Table 3) one of the clinical manifestations that can be seen is the presence of edema in the lower extremities which usually starts in the feet and knees, which will gradually increase up the legs and thighs and finally to the external genitalia and lower body¹⁵. Peripheral edema will cause a decrease in health function and quality of life,

discomfort, changes in body posture, decreased mobility and increased risk of falling, and impaired sensation in the legs, making it difficult for patients to walk long distances, climb or descend stairs, and shortness of breath so that patients are more likely to walk sitting¹⁶.

Failed patients : A heart with a pothe or quality of life will slow the functional recovery process and reduce the quality of life. Several factors, including therapy and clinical outcomes can influence this difference in quality of life. The above factors can affect a person's life chances and opportunities by means of the availability of health resources that can be accessed so that it impacts self-perception of quality of life. Therefore, quality of life assessment is an important health outcome for heart failure patients in order to improve the patient's quality of life.

Based on Quality of Life data in Table 4, it can be concluded that heart failure therapy received by patients is effective, where therapy is designed to relieve symptoms, stop or delay disease progression, prolong life, and, ultimately, improve quality of life. Heart failure patients with a poor quality of life will slow down the functional recovery process and reduce their quality of life. This difference in the quality of life can be influenced by several factors including therapy, clinical outcome, sociodemographic characteristics (age, gender, education, occupation), adherence level, NYHA degree classification, depression level, emotional intelligence, family support, supportive-educative system, self-management, and comorbidities¹⁷. The factors above can affect a person's life opportunities and chances by means of the availability of health resources that he can access so that they have an impact on self-perception of quality of life. Therefore, quality of life assessment is a significant health outcome for heart failure patients to improve the patient's quality of life.

According to Table 5, it was known that 65.6% of patients with furosemide and spironolactone had a good quality of life compared to a single therapy of furosemide or spironolactone only 17.2% per each. In comparison, 50% of patients who got single furosemide had a poor quality of life compared to single spironolactone or the combination of furosemide and spironolactone with poor quality of life 25% per each.

The study's limitations include the absence of a classification system for the degree of congestive heart failure among patients in the medical records. Challenges encountered during the study involved some respondents who declined to complete the questionnaire and limitations due to the respondents' constrained time and unsupportive conditions, such as rushing or compromised health conditions.

CONCLUSIONS

The study concludes that the quality of life among CHF patients at Dr. M. Djamil Padang Hospital is relatively good, despite the predominant use of furosemide and spironolactone in therapy, despite a prevalent occurrence of peripheral edema among the patients. Furthermore, a significant relationship between diuretic therapy, clinical outcomes, and the quality of life of CHF patients was observed.

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Conflict of interests

There are no competing interests to declare.

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